REDACTED VERSION

From: <u>Bojes, Heidi (DSHS)</u>

To: Young, Patrick; May, Shaun; "Milton, S"; "Martin, Thomas"; Turner, Philip

Cc: <u>Pettigrew, George</u>

Subject: RE: Sampling Discussion (City of Amarillo)
Date: Monday, February 20, 2017 12:56:35 PM

Attachments: Sampling Location.docx

Thanks Patrick for the useful document.

I compared the concentrations detected in the home to occupational and residential comparison levels (see attached document). While all air samples collected in the home were below occupational levels, they exceed the long-term residential comparison level. Also, the reporting level (which is the lowest quantifiable level) of 0.016 ppm is above the residential comparison value for long-term exposure.

Laboratory methods with reporting limits below the residential comparison level have not been established.

EPA's RfC is based on a laboratory study conducted in mice that were exposed to various levels of phosphine gas over a 13 week period (Barbosa et al, 1994). A lowest observed-adverse-effect-level (LOAEL) of 4.5 ppm and a no-observed-adverse-effect-level (NOAEL) of 1 ppm were designated based on decreases in body weight in female rates. The levels detected in the home are below the LOAEL and NOAEL.

I also spoke with Dennis Keith (bureau manager of emergency response and waste management with Davis County Health Department in Utah) last week. He was the incident commander for the phosphine gas incident in Salt Lake City in February 2010. The situation in Utah was similar to the Texas one in that pesticide (Fumitoxin – containing 55% aluminum phosphide) was placed under a back-filled porch and phosphine gas was released into a home. Remediation conducted in the home included removal of the pesticide pellets and thoroughly ventilating the home using fans, which they set up to blow air out of the home. After day or two of ventilation, gas monitors (dragger tubes with a PID) were used to evaluate phosphine gas. Base on the lack of phosphine gas detected in the home and the fact that the pesticide was removed, the home was determined to be habitable. They did not collect any confirmation samples.

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From: Young, Patrick [mailto:young.patrick@epa.gov]

Sent: Thursday, February 16, 2017 7:16 AM

To: May, Shaun; 'Milton, S'; Bojes, Heidi (DSHS); 'Martin, Thomas'; Turner, Philip

Cc: Pettigrew, George

Subject: RE: Sampling Discussion (City of Amarillo)

Okay everyone!! I finally found the clarity that I was seeking that should better explain what we are dealing with as far as indoor air exposures to the public based on occupational values we have derived. EPA put together an extremely useful visual aid that lumps in occupational, acute, short term, subchronic, chronic and general public exposures all in one visual aid. On the viewer its page 177; the document page is 170 for Phosphine. Hopefully this will help assist in making the health call on when it is safe to reoccupy the residence.

CAPT Patrick Young, RS, MS U.S. Public Health Service ATSDR R6 Regional Rep Division of Community Health Investigation Dallas, Texas 214-665-8562 (o)

----Original Appointment----

From: May, Shaun [mailto:Shaun.May@amarillo.gov]

Sent: Friday, February 10, 2017 3:42 PM

To: May, Shaun; 'Milton, S'; Bojes, Heidi (DSHS); Young, Patrick; 'Martin, Thomas'; Turner, Philip

Subject: Tentative hold for Final Sampling Discussion (City of Amarillo)

When: Wednesday, February 15, 2017 3:00 PM-4:00 PM (UTC-06:00) Central Time (US &

Canada).

Where: Conf Call - Call-in Number (b) (6)
When: Wednesday, February 15, 2017 3:00 PM-4:00 PM (UTC-06:00) Central Time (US &

Canada).

Where: Conf Call - Call-in Number (b) (6)

Note: The GMT offset above does not reflect daylight saving time adjustments.

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Discussion about final sampling results

Sampling Location	Result ppm (mg/m³)	Comparison Levels Occupational ppm (mg/m³)	Comparison Levels Residential ppm (mg/m³)
Bedroom 1	0.019 (0.026)	EPA AEGL 8-hr ¹	EPA RfC chronic ⁵
Bedroom 2	0.019 (0.027)	0.45 (.63)	0.0002 (0.0003)
Bedroom 3	<0.016 (<0.023)		
Bathroom 1	0.018 (0.024)	OSHA PEL 8-hr ²	
Bathroom 1	0.021 (0.030)	0.3 (0.42)	
Bathroom 2	<0.016 (<0.023)		
HVAC system	0.024 (0.033)	NIOSH STEL 15-	
Kitchen	0.017 (0.024)	min ³	
Laundry Room	0.021 (0.029)	1 (1.4)	
Laundry Room	0.017 (0.024)	NIOSH IDLH ⁴ 50 (70)	

- 1. EPA Acute Exposure Guideline Levels (AEGL) for airborne chemicals describe the human health effects from once-in-a-lifetime, or rare, exposure to airborne chemicals. Used by emergency responders when dealing with chemical spills or other catastrophic exposures.
- 2. The Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) is 0.3 ppm as an 8-hour time-weighted average. The PEL is the level intended to be protective of workers' health for an entire 8- or 10-hour work shift.
- 3. The National Institute for Occupational Safety and Health (NIOSH) short-term exposure limit (STEL) for phosphine is 1 ppm. This is a 15-minute time-weighted average concentration that should not be exceeded during any part of a workday.
- 4. NIOSH has established 50 ppm as the immediately dangerous to life and health (IDLH) concentration for phosphine gas. The IDLH is the concentration that could result in death or irreversible health effects.
- 5. EPA reference concentration (RfC) is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. It is not a direct estimator of risk, but rather a reference point to gauge the potential effects. Lifetime exposure above the RfC does not imply that an adverse health effect would necessarily occur.